

Lower Willamette Group

Co-Chairperson: Trey Harbert, Port of Portland

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October 9, 2002

Mr. Travis Williams
Ms. Regina Skarzinskas
Willamette Riverkeeper
380 SE Spokane Street
Portland, OR 97202

RE: Responses to Willamette Riverkeeper comments on the draft Portland Harbor RI/FS Workplan

Dear Mr. Williams and Ms. Skarzinskas,

Enclosed please find the Lower Willamette Group's responses to your comments on the draft Portland Harbor RI/FS Workplan. We recognize that Riverkeeper's comments were directed to EPA, as they should be, and these LWG answers are not meant to represent any official response to your questions. We thought they might be helpful and are offered only as a part of the dialogue between the LWG and the community about our draft Workplan.

If you have any further questions, please call Trey Harbert at (503) 944-7325 or Barbara Smith at (206) 343-0250.

Sincerely,

Trey Harbert
Co-Chair

cc: LWG Executive Committee
LWG Legal Committee

USEPA SF



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Lower Willamette Group's Responses to Willamette Riverkeeper Comments on Draft Portland Harbor RI/FS Work Plans

Responses are provided following each comment

GENERAL COMMENTS VOLUME 1

1. GUIDANCE: I have some concerns that the ecological and human health risk assessments do not incorporate DEQ guidance. As the upland work is directed by DEQ and this project is within the State of Oregon, it is my feeling that Oregon rules and guidance should be incorporated into the document where available and applicable.

Response: The Remedial Investigation and Feasibility study (RI/FS) is being conducted with full consideration of EPA guidance and, as required by the Administrative Order on Consent (AOC) for the Site, all other applicable or relevant and appropriate requirements (ARARs). DEQ toxicologists and site managers are actively participating in the review of all documents including the work plans to ensure that the work proposed is consistent with DEQ guidance. DEQ's involvement also includes attending ad-hoc technical and full team meetings between the LWG and EPA, NOAA, USFWS, and the Tribes. The purpose of multi-agency attendance at these meetings is to ensure that the work completed by the LWG is consistent with the requirements of each of these agencies.

2. DOCUMENTATION: The document is based on several key decisions for which adequate documentation/explanation is not provided. For instance, the rationale behind the selection of the ISA is inadequate and incomplete. Furthermore, how and under what conditions the ISA will be expanded is unclear, how the selection of the ISA impacts the ecological and human health assessments is not addressed, documentation of how Native American cultural practices and subsistence-level receptors will be addressed is unclear.

Response: As part of the AOC for the site, a Statement of Work was developed that identified the initial study area (ISA) as the area that would be more comprehensively evaluated during the first round of sampling. The initial study area (ISA) was established as the area sampled during EPA's Site Investigation conducted in 1997, and covers the area from river mile (RM) 3.5 to RM 9.2. The Round 1 investigations proposed by the LWG are being conducted from RM 2 – RM 11. This larger area will help evaluate whether the ISA represents a reasonable site boundary or whether the final site boundary will be different from the ISA.

The risk evaluations that occur using Round 1 data will focus on the Round 1 study area. If results of Round 1 indicate that focused study is appropriate beyond the boundaries of the ISA, then subsequent studies will focus on this expanded area. EPA, in the Record of Decision that is developed at the end of the RI/FS, will determine the final boundaries of the Portland Harbor Superfund Site.

Native American cultural practices will be addressed through a cultural resources analysis. EPA has not yet provided the requirements for this analysis and therefore this task was not discussed in the work plan.

Certain Native American tribes have treaty-fishing rights on the Willamette. Potential risks to Native Americans resulting from fish consumption will be evaluated in the human health risk assessment.

3. INCONSISTENCIES: The document states that Native American scenarios will be qualitatively addressed, however the human health risk assessment document implies a quantitative approach.

Response: The human health risk assessment will quantitatively evaluate those scenarios that may be important contributors to the overall risk at the site. Potential risks resulting from fishing and fish consumption by Native Americans will be quantitatively evaluated in the human health risk assessment. Other potential cultural and spiritual uses of the ISA will be qualitatively evaluated.

GENERAL COMMENTS APPENDIX A, TECHNICAL MEMORANDA, FIELD SAMPLING PLAN

1. DOCUMENTATION: "Preliminary screening criteria" should be more adequately defined, or at least sources to be considered should be presented. The CRITFC study indicates that lamprey is an important species for Native Americans, however Table 2-1 in the Field Sampling Plan indicates that this will not be a species considered in the HHRA, documentation should be provided as to why this is not being considered and what species will serve as a surrogate.

Response. Additional information will be provided on preliminary screening values in the data evaluation report:

Anadromous species, which are species that migrate between freshwater and the ocean such as salmon and lamprey, spend only a fraction of their lifespan within the ISA and are exposed to numerous chemicals during their oceanic lives. As a result, the relative amount of chemicals in the tissue of adult anadromous species resulting from exposures in the ISA is anticipated to be significantly less than from exposures occurring outside of the ISA.

The LWG is conducting an extensive investigation of juvenile anadromous species prior to out-migration to the ocean and resident fish species. Juvenile Chinook have been sampled at six locations and juvenile lamprey are proposed for sampling at 22 locations. Juvenile anadromous species and resident fish are anticipated to have greater exposure to chemicals in the ISA than adult anadromous species, which, during migration, spend only a couple of months in the ISA and are not feeding.

The decision to not include adult lamprey in the tissue analyses was based on available information (Kostow 2002, Close et al. 2002) that indicates adult lamprey migrate through the ISA en route to their spawning grounds, but likely spend only a couple of

months, at the most, in the lower Willamette during migration and do not feed during their passage through the lower Willamette River.

2. INCONSISTENCIES: The RAO Tech Memorandum states that surface water will not be considered in the risk assessment, but will be considered in the development of RAOs. The risk assessment indicates that surface water is a complete pathway and will be quantitatively addressed. Table 2-1 of the Field Sampling Plan indicates that lamprey will not be considered in the HHRA, however it does appear in Appendix D Table 5-1 "Relationship between assessment endpoints and measures of exposure and effects."

Response: Surface water will be considered in the risk assessment process and the development of RAOs. The Field Sampling Plan proposed eleven stations for surface water sampling. Adult Pacific lamprey will not be considered in the human health risk assessment for the reasons stated above, however juvenile lamprey (ammocoetes) are included in Table 5-1 of Appendix C because the ammocoetes are detritivores and are the representative species for this feeding guild in the ecological risk assessment.

GENERAL COMMENTS APPENDIX C

1. GUIDANCE: The Ecological Risk Assessment being conducted for the in-water portion of the Portland Harbor Superfund Site should be consistent with the ecological risk assessments being conducted for the uplands areas. Oregon rules and guidance should be incorporated into the process where applicable or adequate documentation and a discussion of the impact of electing one approach over the other should be included. Oregon requires that Federal and State threatened, endangered and sensitive species be protected at the individual level; all others at the community level. Where is this addressed in the document? DEQ guidance requires a multilevel screening approach. Screening Tables have been developed by DEQ and where applicable these tables should be used. DEQ requires the use of the 90 UCL

Response: The ecological risk assessment is being conducted under EPA guidelines and is consistent with DEQ ecological risk guidelines. In addition, a toxicologist from DEQ (Dr. Jennifer Peterson) is actively participating in the development of the Portland Harbor Ecological Risk Assessment.

Species that are listed as threatened or endangered are being evaluated at the individual level, as presented in the work plan (Appendix C). Screening level approaches (such as those presented in the DEQ guidelines) are used to first identify if a site should be evaluated for ecological risk. Because the Portland Harbor Superfund Site is already past that process (i.e., it has already been determined that an ecological risk assessment should be performed), the DEQ screening numbers become less applicable. However, they are and will be evaluated, along with other screening numbers, for use in the Portland Harbor Risk Assessment process until site-specific information is generated.

2. DOCUMENTATION: Is the use of the ISA boundaries appropriate for the ecological assessment? The text clearly states that habitats are more diverse outside of the ISA boundaries. Where are coves, lagoons, slips being incorporated into the eco assessment? According to the text only 5 of the 15 habitats identified along the Superfund site are included in the ISA, how will the other habitats be considered? What about future conditions,

development of the water front area as a park and possibility of additional receptors and habitat in the ISA in the future? How are threatened, endangered and sensitive species being addressed in the ecological risk assessment. Most of the discussion seems to be focused on evaluation of target species at the community/ population level. When determining the SUF, what area is being considered the ISA or the entire site? The Risk Characterization section should clearly delineate receptors evaluated on a community level from those evaluated on an individual level.

Response: The ISA was established as a starting point to better understand the area sampled during EPA's Site Investigation conducted in 1997. Round 1 investigations are being conducted from RM 2 – RM 11 which exceeds the ISA. As described in the Field Sampling Plan, 22 stations are being sampled to support the ecological risk assessment from locations along the main stem of the river as well as in coves and slips. If results of Round 1 indicate that focused study is appropriate beyond the boundaries of the ISA, then subsequent studies will focus on this expanded area. The focus of the ecological risk assessment is based on the conceptual site model, which is a representation of potential chemical sources (historic and current), pathways for chemicals to move from the environment into organisms, routes of exposure to chemicals such as consuming contaminated prey items, and receptors including but not limited to fish, birds and mammals.

All habitat types within the ISA will be included in the ecological risk assessment for Round 1. Future risk will also be considered, including the addition of new habitats. Threatened and endangered species will be evaluated at the individual level rather than at the population level (see work plan). For Round 1, conservative assumptions are used to estimate risk. For example, the risk assessment will assume that the receptors spend all of their time within the site, chemicals are 100 percent bioavailable, etc.

3. INCONSISTENCIES: The text states that reptiles and amphibians are poorly characterized in the study area and may or may not be considered. Table 2-8 "Species of special interest in the ISA" lists several amphibians/reptiles. As these need to be considered on an individual level in the ecological assessment. Reptiles and amphibians should be included in Section 4.4 and Appendix C, Attachment 1.

Response: Reptiles and amphibians were poorly characterized within the ISA. We do know there are "species of special interest" that frequent habitats similar to those in the ISA. Therefore, the LWG undertook an amphibian/reptile and also a plant survey this summer to better understand the habitat characteristics and to document plant types and occurrence of reptiles/amphibians. No reptiles were observed, but amphibians, specifically frogs, were documented in the ISA.

GENERAL COMMENTS APPENDIX D

1. GUIDANCE: The Human Health Risk Assessment being conducted for the in-water portion of the Portland Harbor Superfund Site should be consistent with the human health risk assessments being conducted for the uplands areas. Oregon rules and guidance should be incorporated into the process where applicable or adequate documentation and a discussion of the impact of electing one approach over the other should be included. While comparison

with background is an appropriate prescreening step, the lack of a background number is not justification for eliminating a chemical. The DEQ PHSMMP was not a risk assessment document, and therefore risk assessment guidance did not apply. Chemicals for which no background screening level exists must be retained. DEQ guidance requires a multilevel screening approach using the Region IX PRGs. DEQ requires the use of the 90 UCL in calculating EPCs.

Exposure and intakes for a transient living along the river would be more consistent with those of a camping scenario rather than residential or gardener. Transients living in tents or outside have a much higher exposure (dermal, inhalation and ingestion) to soils, and it must be considered that surface water is a source of "domestic" water. Therefore skin surface area should be more consistent with swimming or bathing.

Response: DEQ is actively participating in the review of the human health risk assessment (HHRA) to ensure that the proposed HHRA is consistent with DEQ guidance. DEQ has also participated in technical ad hoc meetings and provided comments on the initial scoping document for the HHRA, which provided the basis for the HHRA work plan.

The baseline numbers developed in the DEQ PHSMMP were compared to Region IX PRGs to determine whether the baseline concentration might exceed a risk-based screening level. With the exception of barium, the chemicals that do not have background screening levels also do not have Region IX PRGs, as these chemicals are typically common nutrients and have very low toxicity to humans (i.e., calcium, magnesium, potassium, sodium, and thorium). If the detected concentration of barium in sediment exceeds the Region IX PRG, it will be retained for further evaluation.

As discussed in Section 2.3, Region IX PRGs will be used as risk-based screening values in the proposed multilevel screening approach, which is consistent with both EPA and DEQ guidance.

EPCs will be calculated using appropriate methods for the actual dataset. The 95% UCL proposed in Appendix D is more conservative (i.e., will result in a higher exposure point concentration) than the 90% UCL required by DEQ.

If available, site-specific exposure factors will be used to evaluate transient scenarios. Otherwise, appropriate default values will be used. The exposure factors proposed in Appendix D are considered appropriate to evaluate ongoing, repetitive exposures. Although transients are likely to have an exposure to the soils consistent with a camping scenario in the area where they are camped, it is not likely that a camping scenario is consistent with the potential exposure that transients may have with sediments, as transients do not camp below the high-water line. The skin surface area, which includes forearms, hands, lower legs, and feet, is representative of exposures to an adult in a short-sleeved shirt, shorts, and no shoes and is consistent with potential exposures to sediment in beach areas. The potential uses of surface water by transients will be further evaluated. However, surface water is not anticipated to contribute significantly to the overall risk to transients. In the PHSMMP, attempts to incorporate swimming and/or bathing scenarios indicated that these exposure scenarios contributed little to the overall potential risk.

2. **DOCUMENTATION:** The development of a risk conceptual site model begins with an evaluation of all potential receptors and pathways. Receptors and pathways that are eliminated must be documented. Divers are important occupational receptors for the Willamette River, not only in terms of ship repair, but search and rescue as well. These receptors should be retained. It is my understanding OHSU is developing default inputs for this receptor. Likewise, in other risk assessments that considered Native American Exposures, the use of river water in a sweat lodge scenario is an important and complete pathway for surface water. It is unclear whether "non-tribal" fisher represents other high consumers of fish based on ethnic backgrounds or a subsistence fisher. A subsistence fisher/family should be included in the quantitative evaluation if this is not covered under the "non-tribal" scenario.

Response: As discussed in Section 3.1 of Appendix D, the receptors selected for quantitative evaluation in the HHRA should be protective of other potential receptors that will not be quantitatively evaluated. The text will be revised to identify other potential receptors (e.g., divers) and to further clarify the rationale for focusing on those receptors and pathways with the greatest potential risks.

The exposure pathways for Native Americans selected for quantitative evaluation are those anticipated to contribute significantly to the overall risks. Other potential exposures will be discussed qualitatively in the HHRA.

The non-tribal receptor represents high-end consumption, regardless of ethnic background. At the same time, the non-tribal receptor will consider consumption patterns (e.g., preparation methods, consumption of different body parts, etc.) that may be unique to a specific ethnic group. The term "subsistence" when used with regard to fish consumption implies that fish is the only protein source in the diet. EPA, DEQ, and Oregon Department of Health agree that it is not realistic that the only protein source for local fishers is fish caught from the ISA. Therefore, a "subsistence" scenario is not included in the HHRA. However, certain fishers may catch and consume fish from the ISA at a greater rate than the general population. The non-tribal scenario is intended to represent this high-end fish consumption (i.e., fish consumption greater than the general population or recreational fishers) that may occur in the ISA. The non-tribal fisher/family will be included in a quantitative evaluation.

3. **INCONSISTENCIES:** The CRITFC study determined that Native American Fish Consumption rates are 194g/day for adults and 81 g/day for the child, this is inconsistent with the consumption rates in Tables 16 and 17 of Appendix D.

Response: The HHRA will use the 95th percentile consumption rate, which means that the fish consumption rates for 95% of the population are less than or equal to this fish consumption rate, to evaluate potential risks from fish consumption. The use of the 95th percentile is in accordance with EPA guidance and exceeds DEQ's guidance (which only requires the 90th percentile). The 95th percentile consumption rate for adults, as reported in Table 10 of the 1994 CRITFC Fish Consumption Survey, is approximately 170 g/day, which is consistent with the value in Table 16 of Appendix D. Likewise, the 95th

percentile consumption rate for children, as reported in Table 24 of the CRITFC study, is approximately 70 g/day, which is consistent with Table 17 of Appendix D. These consumption rates are also the values recommended in EPA's Exposure Factor Handbook for Native American Subsistence Populations.

Specific Comments

Volume I

1. Section 6.2.1 Page 69 The purpose of a nature and extent evaluation is to determine the types of contaminants present and their vertical and horizontal distribution not merely identifying hot spots.

Response: Agreed. The work plan will be revised accordingly.

2. Section 6.4 Page 73 The human health risk assessment should be conducted in accordance with EPA and DEQ guidance. DEQ requires some additional screening and analysis beyond that in RAGS.

Response: As discussed above, the human health risk assessment will be consistent with EPA guidance and all applicable ARARs. The work plan states that the risk assessment will be consistent with the work plan prepared in 2000 by DEQ for Portland Harbor. In addition, DEQ toxicologists are fully involved in meetings between the EPA Team and the LWG, and conduct thorough reviews of LWG documents. The LWG is committed to conducting risk assessments that are consistent with both EPA and DEQ guidance.

3. Section 7.3 Page 80 Although determining whether chemical contamination extends beyond the ISA is identified as a data need in this section, it is unclear from Table 7-3 how this is to be accomplished.

Response: In Table 7-3, Step 4 of the DQO process includes sampling within the ISA plus 1.5 miles on either side of the ISA boundary during Round 1. The resulting data will be evaluated for both concentration trends and risk. Sampling beyond the Round 1 area (approximately RM 2 – RM11) may occur in subsequent sampling efforts if trends in chemical concentrations or other information suggests that contaminated sediments are found beyond the sampled area.

4. Table 7-3 How will consistency with DEQ be ensured. A workplan or requirements for DEQ workplans to ensure that data collected is usable for the in-water portion should be provided in this report.

Response: Identifying the requirements for DEQ work plans for upland facilities is beyond the scope of this work plan and the authority of the LWG. However, it is strongly recommended that DEQ follow the sampling and analytical methodologies presented in the approved field sampling plan and quality assurance project plan for any in-water work to ensure that all data generated within the Harbor are useable for all purposes.

5. Section 7.6 Page 84 and Table 7-1 How will data be gathered for determining quantity and types of fish and shellfish ingested. Shouldn't this be done before selecting the target species. What data area already available on fish consumption and how will they be used? 6. What about

plants, in particular, Wapato which is an important plant species for Native Americans? What information will be gathered on other important plant species and how will it be used?

Response: The target species are those species consumed regularly and in significant quantities. These species were identified from previous studies conducted in Portland Harbor and the lower Willamette as well as through personal communications with local fishers.

Default fish consumption rates are available from EPA and DEQ based on fish ingestion throughout the United States. Site-specific consumption rates for the Columbia Slough and Sauvie Island were determined in a consumption survey by Adolfson Associates in 1996. The 1994 CRITFC study determined consumption rates for Native Americans in the Columbia River Basin. These consumption rates will be used initially as starting points for estimates of potential risk.

Qualitative studies in the area include a study in the mid-Willamette conducted by EVS in 1998 and the Agency for Toxic Substances and Disease Registry (ATSDR) initial Public Health Assessment for Portland Harbor. While the qualitative studies do not provide actual consumption rates, they do provide information related to the actual species consumed and can be used to evaluate the appropriateness of default consumption rates.

Based on available information, wapato collection does not occur within Portland Harbor, but rather along the banks of Multnomah Channel on the south side of Sauvie Island. A plant reconnaissance is currently being conducted to determine which plants are actually found in the ISA.

6. Section 7.7 Page 85. In addition to the potential for recontamination from upland sources, what about recontamination from redistribution if sediments due to river flow? How will information on sinks and scoured areas be incorporated into this evaluation?

Response: The LWG will be developing hydrodynamic and sediment transport models that will be valuable tools in the assessment of patterns of sediment movement. The outputs of these models can be evaluated in concert with sediment chemical data to better understand contaminant transport regimes.

7. Table 7-4. What about other constituents in groundwater, in particular those that are persistent and bioaccumulate? What about indirect pathways of exposure?

Response: Groundwater constituents other than volatile organic compounds will adhere to sediments (due to their chemical characteristics) and will be quantified via sediment sampling. Collection and analysis of sediment samples for persistent bioaccumulative compounds will provide information on the distributions of potential areas of concern of these compounds.

8. Table 7-10 Important plant species should be added to the table. The process for determining species of importance for human health should be identified and the selection process clearly delineated. For instance, fish consumption surveys have identified sturgeon as an important species which is consumed by sportsfishermen, yet it is not included as a target species for human health.

Response: The process and criteria used to select target fish species for human health are described starting on page 17 of Appendix D.

As discussed in Appendix D, sturgeons are semi-anadromous and may spend significant portions of their lives outside of the Willamette River. As such, body burdens of sturgeons represent exposures to multiple locations, often integrating exposures over 30-50 years or more. The LWG recognizes the value of sturgeon as a sports fish and acknowledges that recreational fishers consume sturgeon. However, due to the inability to evaluate the potential exposure that sturgeon may receive within the ISA, and therefore the inability to evaluate potential sources to the body burdens of sturgeon, resident fish species with more limited home ranges were selected as target species.